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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,026	09/26/2003	Charlene S. Smith	1797A2	7705
7590	06/01/2006		EXAMINER	
PPG INDUSTRIES, INC. INTELLECTUAL PROPERTY DEPT. ONE PPG PLACE PITTSBURGH, PA 15272				LAZORCIK, JASON L
		ART UNIT	PAPER NUMBER	
		1731		

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/672,026	SMITH ET AL.	
	Examiner	Art Unit	
	Jason L. Lazorcik	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 26 September 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-19 is/are rejected.
- 7) Claim(s) 2-12 and 14-16 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 26 September 2003 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. 60/414,516.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/19/03, 03/22/04.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: Multiple spelling mistakes and format errors were observed in the body of the specification including but not limited to the following:

1. Page 1 Title
2. Page 2 Line 25
3. Page 5, Line 3
4. Page 4, Line 29

The applicant's cooperation is requested in addressing the listed errors and additional minor editing corrections. Appropriate correction is required.

Claim Objections

Claims 14 and 15 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Specifically in Claim 14, it is unclear how the stated end use of the float glass product as a "piece of glass in a laminated product" further limits the claimed invention of a float glass chamber. Similarly in Claim 15, the claimed end use of the glass product in a laminated windshield fails to further limit the parent claims drawn to a float glass chamber.

Claims 2, 3, 4, 5, 6, 7, 9, 10, and 11 are objected to because of the following informalities: Since the independent claim 1 is drawn to “a float *glass* chamber”, all the dependent claims should be amended from the present form of “a float chamber” to “a float **glass** chamber” in order to clearly identify the meets and bounds of the intended invention. Appropriate correction is required.

Claims 8, 12, and 16 objected to because of the following informalities:

Claim 8 includes grammatical errors.

- a. Specifically, “*an* cold section” should be changed to “a cold section” and a period should be used to terminate the claim.
- b. Claim 12 should be terminated with a period.
- c. Claim 16 should be amended for grammer including changing “*an* cold section” to “a cold section” and it should be reformatted.

Appropriate correction is required.

Claim 13 is objected to because of the following informalities: The reference to “the *total weight percent*” is understood as 100% of the total weight of the composition. The term “percent” is not necessary here and as such it should be dropped from the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 through 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the lower plenum" in line 2 and "the boundary line" in line 4. There is insufficient antecedent basis for these limitations in the claim.

In addition, the term "boundary line" fails to set forth any structural limitations on the float glass chamber. In the immediate context, the "boundary line" is understood to be an arbitrary, varying demarcation within said float glass chamber and is therefore locally dependent upon the specific operating conditions of the chamber (e.g. inlet temperature set point, minor fluctuations in process temperature). The term "boundary line" is therefore rendered indefinite for failing to set forth the meets and bounds of patent protection intended by the applicant.

Further, the term "hot section" and "cold section" in claim 1 are relative terms which render the claim indefinite. The term "hot" and "cold" are not adequately defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim 6 recites the limitation "the lower plenum" in line 2 and "the boundary line" in line 4. There is insufficient antecedent basis for these limitations in the claim.

Further, the term "boundary line" is rendered indefinite for the reasons laid out in the rejection of claim 1 above.

In addition, the instant claim sets forth a condition wherein the temperature of the glass "falls below a temperature greater than 1600°F". Here again, the intended limitation is unclear from the applicants terminology and therefore the exact meets and bounds of patent protection are rendered as unclear

Claims 5, 7, and 12 recite the limitation "the lower plenum of the cold section" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites the limitation "the boundary line" in line 4 and "the lower plenum" in line 6. There is insufficient antecedent basis for these limitations in the claim.

Further, the term "the boundary line" is rendered indefinite for the reasons set forth in the claim 1 rejection above.

Claim 16 recites the limitation "the boundary line" in line 5 and "the lower plenum of the hot section" in line 8. There is insufficient antecedent basis for these limitations in the claim.

Further, the term "the boundary line" is rendered indefinite for the reasons set forth in the claim 1 rejection above.

Claim 17 recites the limitation "the lower plenum of the hot section"" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 through 12,16, and 17 rejected under 35 U.S.C. 102(b) as being clearly anticipated by Taylor (3,337,322). Briefly, Taylor describes a float glass manufacture process wherein the headspace over the liquid metal is constituted by a protective atmosphere.

Specifically with respect to Claim 1, the immediate reference (C2 L6-16) describes a chamber for the manufacture of flat glass wherein the glass sheet is supported on a bath of molten tin which is understood in the present context to be a float glass chamber. Taylor clearly states (C2 L60-72) that a protective atmosphere is maintained in the headspace or "lower plenum" consisting of an inert gas with an admixture of about 0.25% to 3.0% of a reducing gas and that said gas is advantageously hydrogen (C3 L1-3). It is understood in the interpretation of the Taylor reference that the stated percentage concentration values both here and in any subsequent reference are a volumetric basis. The reference continues by asserting that the glass is cooled as it is advanced from the chamber inlet to the chamber outlet (C5 L29-44). From this statement it is understood that there is a "hot section" beginning at the chamber inlet and a "cold section" terminating at the chamber outlet, and that a boundary or location must exist defined between chamber inlet and chamber outlet such that the chamber temperature falls below an arbitrary value or "threshold temperature".

Regarding Claims 2,3 and 4, Taylor discloses (C5 L32-43) that the inlet temperature is *at least* 1000°C and that the outlet temperature is about 600°C. By the same principle presented in the Claim 1 rejection above, a location must exist between

the inlet and the outlet such that the temperature reaches a "threshold value" between "at least" 1000°C and about 600°C.

Specifically with respect to Claim 2, a location can be defined in the chamber where the temperature reaches a threshold temperature value of 871°C (1600°F) which is between *at least* 1000°C and about 600°C.

With respect to Claim 3, a location can be defined in the chamber where the temperature reaches a threshold temperature value of 982°C (1800°F) which is between *at least* 1000°C and about 600°C.

Regarding Claim 4, since Taylor indicates an inlet temperature of *at least* 1000°C, he does not preclude temperatures in excess of say 1148°C (2100°F). Therefore, a location can be defined in the chamber where the temperature reaches a threshold temperature value of 1148°C (2100°F) which is between *at least* 1000°C and about 600°C.

With respect to Claim 5, Taylor (C2 L59-64) clearly states that the composition of the protective atmosphere "maintained in the region of the (chamber) outlet is inert or substantially inert, with an admixture of about 3% to about 10 % of a reducing gas". As described above the chamber outlet is considered to be in the cold section and therefore the atmosphere of the lower plenum in said cold section comprises up to 10% hydrogen.

Concerning Claim 6, Taylor has fully outlined all claimed elements (See rejections for Claims 1 and 3 above) for a float chamber having a hot section with a lower plenum atmosphere comprising less than 3% Hydrogen (Claim 1 rejection) and a

boundary between said hot section and a cold section (Claim 1 rejection) where the temperature of the glass falls below a threshold of greater than 1600°F (Claim 3 rejection).

With respect to Claim 7, Taylor in reference to the above rejection of claims 6 and 5 specifies that the atmosphere above the chamber outlet or cold section comprises an admix of about 3% to 10% hydrogen or “up to 10%” hydrogen.

Regarding Claim 8, Taylor (C3 L47-49 and Fig1) indicates the presence of a forehearth of a continuous glass melting furnace which is understood to produce a glass melt by melting a glass composition. The reference further indicates (C3 L69-71) that this molten glass is constrained to flow into the chamber through the spout 3 in figure 1. This process is broadly read as equivalent to pouring the glass melt into the float chamber. As outlined above (see claim 1 rejection) said chamber has a hot and cold section and a boundary line defined between the sections where the temperature falls below a threshold temperature value, and that the lower plenum atmosphere comprises less than 3 percent hydrogen.

Claims 9,10 and 11 are clearly anticipated in light of the Claim 8 rejection above and the appropriate rejections of Claims 2, 3, and 4, respectively.

Claim 12 is clearly anticipated by Taylor in light of the Claim 8 rejection and with referencnt to the rejection of Claim 5 as outlined above.

Claim 16 and 17 are clearly anticipated in light of the Claim 8 rejection above and the immediate reference (C4 L24-26) which asserts that “the protective atmosphere is fed into the main or central headspace over the bath ...of 99.5% of nitrogen and 0.5% of

hydrogen". This latter quote reads directly on Claim 16(c.) as pumping or feeding a gas mixture comprising less than 3% hydrogen into at least the lower plenum of the hot section or the headspace over the bath. Further, the latter quote reads directly on Claim 17 as pumping or feeding a gas mixture comprising less than 1% hydrogen into at least the lower plenum of the hot section or the headspace over the bath.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor (3,337,322) in view of Kobayashi (US 6,532,771) and prior art teaching presented in the body of the present specification.

With respect to Claim 13, Taylor outlines (see Claim 8 rejection above) a method of melting a glass composition, pouring said melt into a float chamber having the appropriate hot and cold sections, a boundary line with threshold temperature, and a

lower plenum atmosphere of less than 3% hydrogen. Taylor does not teach that the as prepared glass melt should have a specific water content equal to or greater than 0.035 weight percent of the composition. Kobayashi teaches the use of a glass melting furnace utilizing an enriched oxygen content fuel as a means for increasing the fuel efficiency of said furnace. Kobayashi (C1 L48-54) continues by asserting;

"The concentration of water vapor in the atmosphere of an oxy-fuel fired furnace is typically in a range between 50 to 65% as compared with 15 to 20% for an air-fuel fired furnace. A higher water vapor pressure in the atmosphere increases dissolution of water into glassmelt"

It is further presented in the immediate specification (Page 2 Lines 3-4) that "typically, glass melted in an oxy-fuel furnace contains more than 0.045 weight percent water based on the total weight of the composition"

It would have therefore been obvious to one of ordinary skill in the art at the time of the invention to modify the Taylor process to incorporate an oxy-fuel fired furnace in the glass melt forehearth to improve the fuel-efficiency of said melting step. By virtue of this incorporation, the glass melt would have obviously consisted of a water content of more than 0.045 weight percent water as suggested by prior art teaching or "equal to or greater than 0.035 weight percent water" as claimed.

With respect to Claim 19, Taylor outlines (see Claim 16 rejection above) a method of melting a glass composition, pouring said melt into a float chamber having the appropriate hot and cold sections, a boundary line with threshold temperature, and a lower plenum wherein an atmosphere of less than 3% hydrogen is pumped into said hot

section. Taylor does not teach the use of an oxy-fuel fired furnace to melt the glass prior to pouring into the float chamber. Kobayashi (C1 L19-22, C1 L40-46) teaches the use of a glass melting furnace utilizing an enriched oxygen content fuel or "oxy-fuel" as a means for increasing the fuel efficiency of said furnace in the production of float glass. It would have therefore been obvious to one of ordinary skill in the art at the time of the invention to modify the Taylor process to incorporate an oxy-fuel fired furnace in the glass melt forehearth to improve the fuel-efficiency of said melting step as noted by Kobayashi.

Claims 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor (3,337,322) in view of Landa (US2002/0059811 A1).

Regarding Claim 14, Taylor teaches all the elements of Claim 8 as outlined above. Taylor does not indicate that the glass produced from the float glass chamber is to be utilized as a component in a laminated product. Landa teaches the production of a laminated product produced by fusing sheets of float glass (¶ [0023]). It would have been obvious to one of ordinary skill in the art to utilize the float glass produced in the Taylor process in a subsequent lamination process as broadly outlined by Landa in order to produce a laminated glass product.

Regarding Claim 18, Taylor teaches all the elements of Claim 16 as outlined above. Taylor does not indicate that the glass utilized in the float glass chamber is to be of a specific composition. Landa teaches the use of a preferred soda-lime-silica glass composition derived from a float glass process, claimed as a "conventional float glass composition", and having a composition of (see ¶ [0034] and associated Table):

1. SiO_2 – 68 to 75%
2. Al_2O_3 – 0-1%
3. Na_2O – 10-18%
4. MgO – 0-5%
5. CaO – 5 to 15%

The float glass utilized in the Landa reference reads directly on the claimed composition of 65-75% SiO_2 , 10-20% Na_2O , 5-15% CaO , 0-5% MgO , 0-5% Al_2O_3 , 0-5% K_2O , and 0-2% Fe_2O_3 . It would have been obvious for one of ordinary skill in the art to utilize a “conventional float glass composition” as described by Landa in the float glass process as detailed by Taylor in order to make a float glass ribbon.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor as modified by Landa in further view of Reese (US 3,865,680). As described above, Taylor and Landa render obvious all of the elements set forth in Claim 14. Taylor in view of Landa does not teach that the ultimate use of the laminated product is as a windshield. Reese sets forth a case where a laminated float glass (C8 L16-40, C13 L61-68) article is fabricated for use as a windshield. It would have been obvious given the motivation set forth by Reese for one of ordinary skill in the art at the time of the invention to utilize the laminated product as defined by the Taylor-Landa combination in a final embodiment of a windshield.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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